

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Inventor(s): Julie Baker, et al.

FOAMED POLYMER LAYERS
AS INKJET RECEIVERS

Serial No.: 10/631,236

Filed: July 31, 2003

Group Art Unit: 1774

Examiner: Schwartz, Pamela R.

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER RULE 132

The undersigned, Julie Baker of Watford, United Kingdom, declares that:

Her education includes a first class honours degree in Chemistry from Thames Valley University, England.

She joined Kodak Ltd in 1986 as a Research Scientist working on a range of development projects, including ten years working on the design of novel inkjet media for improved ink absorption, image quality and stability. She has also undertaken studies to develop world class inkjet media with substantial reductions in manufacturing costs. She has patents that have issued on 19 different inventions.

She is co-inventor of the above-captioned application, along with Joanne Hunt, a former co-worker at Kodak Ltd.

She has reviewed the outstanding Office Action on the above-captioned application in which the Examiner has rejected under 35 U.S.C 103(a) claims 5-7, 9-12 and 16-22 as being unpatentable over Iwasa *et al*, US 2002/0012786.

The Examiner cites MPEP 2111.03 which provides that the transitional phase “consisting essentially of” limits the scope of a claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristics” of the claimed invention. The cited passage further states that ‘if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of “consisting essentially of”, applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant’s invention’.

The invention of the above-captioned application relates to an inkjet recording medium consisting essentially of a support and one or more porous hydrophilic polymer ink receiving layers supported on the support, wherein the one or more porous hydrophilic polymer ink receiving layers consist essentially of a porous foamed hydrophilic polymer, the hydrophilic polymer being swellable. Preferably the porous foamed hydrophilic polymer is created from a swellable hydrophilic polymer and one or more blowing agents.

Thus the invention provides only for the use of a hydrophilic polymer (and optional surfactant and/or crosslinker) and not a hydrophobic polymer or particles in the layers. Porosity is created in a preferred embodiment through the use of a blowing agent which forms pores with the polymer layer. When ink is applied during printing, the hydrophilic polymer swells and the fluid part of the ink is drawn into pores enabling rapid absorption of the ink. Any excess fluid is absorbed by the swollen hydrophilic polymer surrounding the pores. At the same time, the dye contained in the ink is absorbed into the swollen polymer, providing good light and ozone stability as the dye is protected within the polymer.

In Iwasa *et al*, a significant percentage of the thermoplastic resin polymer present in the layer is ‘non-hydrophilic’, i.e. hydrophobic, since it has to be in an equal or preferably greater amount than the hydrophilic component (see [0012]). In addition, 10-70% of the layer is required to be an inorganic or organic fine powder. Addition of either a hydrophobic polymer or a fine powder to the invention as claimed **would** materially affect its basic and novel characteristics for the reasons stated below.

The performance of inks and media depend on their hydrophilic or hydrophobic nature. Thus, if there were a significant quantity of 'non-hydrophilic', i.e. hydrophobic, polymer within the media formulation of the invention, there would be substantially less capacity for the absorption of the fluid, as the fluid would only be able to access the smaller percentage of pores that are surrounded by the hydrophilic polymer. This is because the hydrophobic polymer would not allow the fluid (a significant part of which is water) to pass through it and access the pores. Any excess fluid not reaching the pores would therefore have to be absorbed by the reduced level of hydrophilic polymer present, which would in turn result in a much slower rate of absorption of the ink off of the surface, thus materially affecting the desired characteristics of the invention.

If fine inorganic or organic powder were included in the porous hydrophilic polymer layer, the overall porosity of the layer would be reduced as some of the particles would fill in the pores already created in the polymer and any spaces between the particles would be filled up with the swellable hydrophilic polymer. This overall loss of porosity would result in a much slower rate of absorption of the ink off of the surface, thus again materially affecting the characteristics of the invention medium.

In order to create a system having sufficient porosity to cope with all the printed fluid in the presence of fine inorganic or organic powder, one could use a very low level of hydrophilic polymer in comparison to the particles. This would allow all of the fluid to move rapidly off the surface and into the pores, but in addition, the low level of hydrophilic polymer would have to be so low that the dye would also be located within the pores between the particles. This would mean that the dyes would have no protection from the environmental conditions and the image stability would be significantly reduced, thus materially affecting the characteristics of the invention.

The undersigned declares further that all statements made herein of the undersigned's own knowledge are true and that all statements made on information and belief are believed to be true. These statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 25/9/08

J Baker
Julie Baker